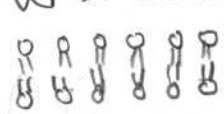




Δ = small solute
 \square = large solute

w = water

 = Lipid bilayer

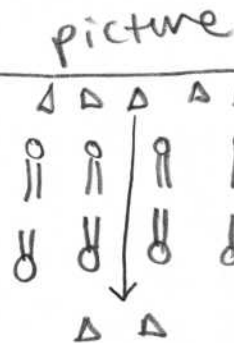
 = protein channel

 = protein pump

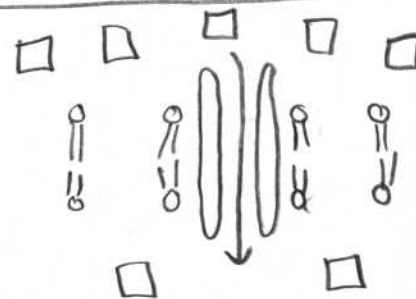
 = ATP

Type of Transport

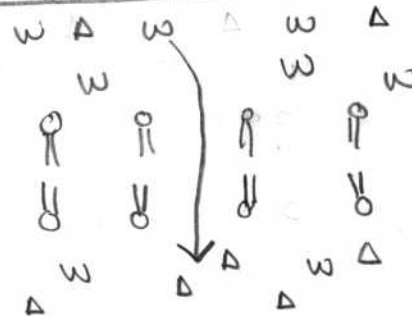
Simple Diffusion



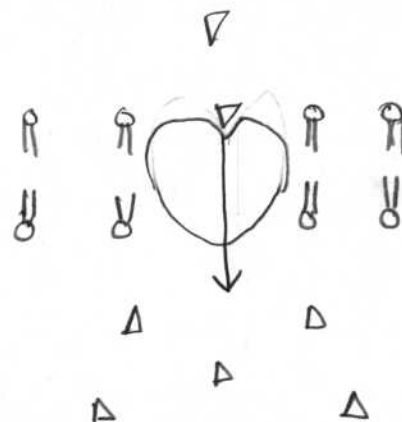
Facilitated Diffusion



Osmosis



Active Transport
 using protein pumps



Cell Transport Review

ms. Ottolini, Pre-AP Biology

Type of Transport	Passive or Active	High to Low or Low to High concentration	Down or up Gradient	Types of particles moving	Other
simple Diffusion	passive	High to Low	Down	small, nonpolar solutes	small, nonpolar solutes can diffuse easily through the lipid bilayer
Facilitated Diffusion	passive	High to Low	Down	Large or polar solutes	Large, polar solutes must use channel or carrier proteins to pass through the membrane
Osmosis	passive	High to Low	Down	water	water (even though it is polar) is small enough to diffuse easily through a semipermeable membrane
Active Transport using Protein Pumps	Active	Low to High	Up	solutes	solutes must use protein pumps (powered by ATP) to cross the membrane
Bulk Transport	Active	N/A	N/A	Large amounts of material	uses membrane folding (requires ATP) and vesicles Endocytosis - Bringing materials in Exocytosis - sending materials out